

WHAT IS CLAIMED IS:

1. A method comprising:

providing an unsingulated semiconductor wafer comprising a plurality of dice formed thereon, each said die having a plurality of electrical terminals disposed within a boundary of said die;

forming elongate interconnect elements on at least one of said dice, said interconnect elements extending beyond the boundary of said at least one die, said interconnect elements being in electrical communication with the terminals of said at least one die; and

thereafter singulating said wafer into individual dice.

2. The method of claim 1, wherein said interconnect elements are formed on a plurality of said dice such that interconnect elements on adjacent dice are interposed between each other in interleaved fashion.

3. The method of claim 1, wherein said singulating comprises:

affixing a fixative to said wafer,

dicing said wafer along scribe streets between said dice, and

removing individual die from said fixative.

4. The method of claim 3, wherein said fixative comprises adhesive tape.

5. The method of claim 3, wherein said dicing is performed from a side of said wafer opposite a side on which said plurality of terminals are disposed.

6. The method of claim 1, wherein said elongate interconnect elements are resilient.

7. The method of claim 1, wherein said elongate interconnect elements comprise an inner wire core and a coating.

8. The method of claim 7, wherein said coating is formed of a material that is stronger than said wire core.

9. The method of claim 7, wherein said coating is formed of a material that is more resilient than said wire core.

10. The method of claim 1, wherein said elongate interconnect elements are lithographically formed.

11. The method of claim 1 further including adhering a stretchy material to said plurality of dice, and, after singulating said wafer, stretching said stretchy material to increase space between said dice.

12. The method of claim 1, wherein said singulating comprises:

affixing a first fixative to a front side of said wafer, wherein said front side is a side on which said plurality of terminals are disposed,

dicing said wafer along scribe streets between said dice,

affixing a second fixative to a back face of said wafer, and

removing said first fixative from said wafer.

13. The method of claim 1, further comprising grinding said wafer prior to singulating said wafer.

14. The method of claim 1, further comprising polishing said wafer prior to singulating said wafer.

15. The method of claim 1, wherein said elongate interconnect elements extend across a scribe street between said at least one die and a neighboring die and into the boundary of said neighboring die.

16. An apparatus comprising:

an unsingulated semiconductor wafer comprising a plurality of dice formed thereon, each said die having a plurality of electrical terminals disposed within a boundary of said die; and

elongate, interconnect elements formed on at least one of said dice, said interconnect elements extending beyond the boundary of said at least one die, said interconnect elements being in electrical communication with the terminals of said at least one die.

17. The apparatus of claim 16, wherein said interconnect elements are formed on a plurality of said dice such that interconnect elements on adjacent dice are interposed between each other in interleaved fashion.

18. The apparatus of claim 16, wherein said elongate interconnect elements are resilient.

19. The apparatus of claim 16, wherein said elongate interconnect elements comprise an inner wire core and a coating.

20. The apparatus of claim 16, wherein said elongate interconnect elements are lithographically formed.

21. The apparatus of claim 16, wherein said elongate interconnect elements extend across a scribe street between said at least one die and a neighboring die and into the boundary of said neighboring die.

22. A method comprising:

providing an unsingulated semiconductor wafer comprising a plurality of dice formed thereon, each said die having a plurality of electrical terminals disposed within a boundary of said die;

forming packaging on at least one of said dice, said packaging including a plurality of extensions extending beyond the boundary of said at least one die;

forming on said plurality of extensions a plurality of interconnect elements, said interconnect elements being in electrical communication with the terminals of said at least one die; and

thereafter singulating said wafer into individual dice.

23. The method of claim 22, wherein said extensions are formed on a plurality of said dice such that said extensions on adjacent dice are interposed between each other in interleaved fashion.

24. The method of claim 22, wherein said singulating comprises:

affixing a fixative to said wafer,

dicing said wafer along a scribe streets between said dice, and

removing individual die from said fixative.

25. The method of claim 24, wherein said fixative comprises adhesive tape.

26. The method of claim 24, wherein said dicing is performed from a side of said wafer opposite a side on which said plurality of terminals are disposed.

27. The method of claim 22 further including adhering a stretchy material to said plurality of dice, and, after singulating said wafer, stretching said stretchy material to increase space between said dice.

28. The method of claim 22, wherein said singulating comprises:

affixing a first fixative to a front side of said wafer, wherein said front side is a side on which said plurality of terminals are disposed,

dicing said wafer along scribe streets between dice,

affixing a second fixative to a back face of said wafer, and ,

removing said first fixative from said wafer.

29. The method of claim 22, further comprising grinding said wafer prior to singulating said wafer.

30. The method of claim 22, further comprising polishing said wafer prior to singulating said wafer.

31. The method of claim 22, wherein said extensions extend across a scribe street between said at least one die and a neighboring die and into the boundary of said neighboring die.

32. An apparatus comprising:

an unsingulated semiconductor wafer comprising a plurality of dice formed thereon, each said die having a plurality of electrical terminals disposed within a boundary of said die;

packaging formed on at least one of said dice, said packaging including a plurality of extensions extending beyond the boundary of said at least one die; and

a plurality of interconnect elements formed on said plurality of extensions, said interconnect elements being in electrical communication with the terminals of said at least one die.

33. The apparatus of claim 32, wherein said extensions are formed on a plurality of said dice such that said extensions are interposed between adjacent dice in interleaved fashion.

34. The method of claim 32, wherein said extensions extend across a scribe street between said at least one die and a neighboring die and into the boundary of said neighboring die.

35. A method comprising:
- providing an unsingulated semiconductor wafer comprising a plurality of dice formed thereon, each said die having a plurality of electrical terminals disposed within a boundary of said die;
 - applying a first fixative to a back side of said wafer, said back side of said wafer being a side opposite a side on which said electrical terminals are formed;
 - singulating said wafer from a front side of said wafer while said first fixative is applied to said wafer; and
 - forming elongate interconnect elements on at least one of said dice while said first fixative is applied to said singulated wafer, said interconnect elements extending beyond the boundary of said at least one die, said interconnect elements being in electrical communication with the terminals of said at least one die.
36. The method of claim 35 further comprising:
- applying a second fixative to a front side of said wafer; and
 - removing said first fixative from said wafer.
37. The method of claim 35, wherein said interconnect elements are formed on a plurality of said dice such that interconnect elements on adjacent dice are interposed between each other in interleaved fashion.
38. The method of claim 35, wherein said first fixative comprises adhesive tape.
39. The method of claim 35, wherein said elongate interconnect elements are resilient.
40. The method of claim 35, wherein said elongate interconnect elements comprise an inner wire core and a coating.
41. The method of claim 40, wherein said coating is formed of a material that is stronger than said wire core.

42. The method of claim 40, wherein said coating is formed of a material that is more resilient than said wire core.

43. The method of claim 35, wherein said elongate interconnect elements are lithographically formed.

44. The method of claim 35, wherein said elongate interconnect elements extend across a scribe street between said at least one die and a neighboring die and into the boundary of said neighboring die.

FOOTNOTES